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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,739	02/17/2006	Gerben Meier	FE 6127 (US)	9579

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EXAMINER	
TESKIN, FRED M	

ART UNIT	PAPER NUMBER
1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,739	MEIER ET AL.	
	Examiner	Art Unit	
	Fred M. Teskin	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-25* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20060612*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The preliminary amendment filed on 17 February 2006 has been entered. Claims 1-25 are currently pending and under examination herein.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Ethylene Polymer and Process for the Polymerization of Ethylene.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 16, 17, 16' and 17' (See Figs. 1 and 2 and *cf.*, Specification at pp. 10-12). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 6, 18, 20 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Use of the expressions "comprised between" and "comprised from" to introduce certain parameter ranges in claims 6, 18, 20 and 25 creates uncertainty as to the scope of numerical values intended to be covered. That is to say, the recitation of "between" or "from" appears to indicate selection of values from ranges bounded by specified numerical endpoints and it is unclear whether "comprised", as a normally inclusive term, is intended to expand the literal scope of the ranges; and if so, to what extent. Clarification and appropriate correction are required.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10 and 12-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5728353 (Govoni) in view of EP 1012195.

Govoni is directed to preparing polymers or copolymers of olefins endowed with a highly homogeneous composition by a gas phase (co)polymerization process carried out in two or more fluidized bed or mechanically agitated reactors operating under different reaction conditions (col. 3, ll. 55+). In particular, Govoni teaches a gas phase process with two reaction stages operating at different hydrogen concentration and with recycle of polymer from one stage to the other as being especially applicable to the production of broad molecular weight distribution (MWD) high-density polyethylene (HDPE) homogeneous products (col. 6, ll. 30-60). In a preferred embodiment (col. 9, ll. 5+ and Fig. 4), the process takes place in two gas-phase reactors, one being a fluidized-bed reactor and the other being a tubular reactor in which fast fluidization conditions are maintained. Govoni further demonstrates the production of HDPE using first and second stage gas-phase reactors, see Example 2 and Table 3 in column 15. Per Table 3, hydrogen is used in both stages, the amount of hydrogen in the second stage is less than the first-stage amount and in the first stage, the reported amounts (% mol) of ethylene and hydrogen equate to a hydrogen/ethylene molar ratio of 0.72 (*cf.*, Claim 6).

Govoni differs from the present invention in failing to disclose (I) polymerizing ethylene with at least one α-olefinic comonomer having 3 to 12 carbon atoms in the second gas-phase reactor and (II) the use of a gas phase reactor where growing polymer particles flow upward through a first polymerization zone (riser) under fast fluidization or transport conditions, leave said riser and enter a second polymerization zone (downcomer) through which they flow downward under the action of gravity, leave said downcomer and are reintroduced into the riser, thus establishing a circulation of polymer between said two polymerization zones (Claim 1, final five lines).

However, concerning feature (I), Govoni explicitly provides that the process of its invention can be applied to the production of broad MWD polymers and copolymers of either ethylene or propylene, as well as the production of copolymers of different compositions in two or more stages (see col. 11, ll. 23-25 and 52-56). Thus, at the time of applicants' invention, it would have been obvious to one of ordinary skill in the art to polymerize ethylene with an α-olefinic comonomer such as propylene in the second stage reactor of Govoni.

As to feature (II), the prior art has disclosed catalytic polymerization of α-olefins in a gas-phase reactor as defined in present claim 1. In this regard, see EP '195 at [0013] – [0018]. Similar to Govoni, the stated aim of EP '195 is to significantly broaden the MWD of the obtained polymers while at the same time maintaining a high homogeneity level (see [0011]). To this end, EP '195 teaches embodiments suited to the production of broad MWD polymers by use of hydrogen ([0049] – [0050]) and mentions HDPEs, including copolymers of ethylene with α-olefins having 3 to 12 carbon

atoms, among examples of products that can be prepared by use of its disclosed process ([0058]). Indeed in Example 38 of EP '195, ethylene is copolymerized with butene using a gas-phase reactor as shown in Fig. 1 thereof, which depicts the two polymerization zones (riser and downcomer), and circulation of polymer therebetween, as recited in present claim 1.

At the time of applicants' invention, it would have been obvious to one of ordinary skill in the art to modify the process of Govoni by utilizing as the first and/or second stage reactor therein, a gas-phase reactor as taught by EP '195 in lieu of a fluidized bed reactor. The motivation to do so stems from the fact that EP '195 (1) teaches its reactor as overcoming the shortcomings of fluidized bed reactors in regard to broadening MWD of the obtained polymers and obtaining homogeneous mixtures of different polymer compositions and (2) suggests combining its process with gas-phase, fluidized-bed or stirred-bed polymerization technologies to give rise to a multi-stage process. See EP '195 at [0005]-[0006], [0011] and [0051]-[0053]. Inasmuch as Govoni is similarly concerned with producing broad MWD, homogeneous products (per col. 3, ll. 55-57 and col. 6, ll. 30-35), there would have been ample incentive for an ordinarily skilled practitioner to utilize a reactor as per EP '195 as at least one of the gas phase reactors in the process of Govoni, and thereby arrive at the present invention.

Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6787608 (VanDun).

VanDun has disclosed polyethylene compositions which differ from the applicants' claimed ethylene polymer only in having a bi-modal, rather than tri-modal, molecular weight distribution and in being obtained by a process different to that recited in claim 22. More specifically, VanDun sets forth specific examples of polyethylene compositions which include a copolymerized α-olefinic comonomer within claim 22 (e.g., 1-butene) and which meet the limitations of claims 23-25 as to melt index MIF, melt index MIP, MIF/MIP ratio and density: See Table 6, Examples 3b and 3c; Table 11, Example 5 and Table 13, Example 7 and note that VanDun's melt index parameters $I_{21.6}$, I_5 and $I_{21.6}/I_5$ correspond respectively to applicants' MIF, MIP and MIF/MIP, in accordance with the discussion of melt index measurements (at column 12, line 59 to column 13, line 8). Based on the identity of common properties, the polyethylene compositions of VanDun appear substantially identical to ethylene polymer of the present invention notwithstanding the difference in preparation. Where, as here, a product-by-process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden properly shifts to applicants to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 195 (Fed. Cir. 1983).

Further as to molecular weight distribution, VanDun suggests that the polyethylene composition of its invention may comprise ethylene homopolymer or copolymer as a third component, which makes the composition tri-modal in overall molecular weight distribution (see col. 39, ll. 15-20). In light of this suggested modification, it would have been obvious to one of ordinary skill in the art to modify any

of the above-cited examples of VanDun to include an additional ethylene homo- or co-polymer component, with a reasonable expectation of obtaining a polyethylene composition having an at least tri-modal molecular weight distribution as instantly claimed.

The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. Hagerty et al is cited as pertinent to polyethylene resins having bi-modal and tri-modal molecular weight distributions (note col. 3, ll. 1-20).

Claim 11 is objected to as being dependent on a rejected base claim but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim.

Any inquiry concerning this communication should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Fred M Teskin/

Primary Examiner, Art Unit 1796